CLAIMS

What is claimed is:

1. A method for detecting gabapentinoid activity in a compound comprising the steps of:
introducing into host cells a heterologous DNA sequence that encodes a reporter polypeptide in response to Erk-2 activation;
separating the host cells into at least two groups, a first group and a second group;
treating the first group of host cells with a target compound;
treating the first group and second group of host cells with an Erk-2 agonist;
determining reported polypeptide activity in the first group and in the second group; and
comparing reporter polypeptide activity from the first group to the second group.

2. The method of Claim 1, wherein the host cells are Chinese hamster ovary (CHO) cells.

3. The method of Claim 1, wherein the heterologous DNA sequence encodes luciferase.

4. The method of Claim 1, wherein the Erk-2 agonist is quisqualate.

5. The method of Claim 1, wherein in the Erk-2 agonist is substance P.

6. The method of Claim 1, wherein the separating step comprises the step of separating the host cells into a plurality of groups, and the compound treating step comprises treating each separate group with a compound having a final concentration of between 1 μM and 1 mM.

7. The method of Claim 1, further comprising host cells that express the NK1 receptor.

8. The method of Claim 1, further comprising host cells that express mGluR1.

9. The method of Claim 1, further comprising host cells that express mGluR5.

10. The method of Claim 1, wherein the treating with the Erk-2 agonist step occurs prior to the treating with the gabapentinoid step.

11. A method for analyzing the activity of gabapentinoids in host cells comprising the steps of:
engineering the host cells to express NK-1 receptor;
treating the host cells with an analog or derivative of gabapentin;
treating the host cells with a NK1 agonist; and
analyzing Erk-2 activity in the host cells, wherein the Erk-2 activity is compared to control cells treated only with the Erk-2 agonist, and
determining compounds that have gabapentinoid activity.

12. A method for analyzing the activity of gabapentinoids in host cells comprising the steps of:
engineering the host cells to express mGluR5;
treating the host cells with a gabapentinoid;
treating the host cells with a mGluR5 agonist; and
analyzing Erk-2 activity in the host cells wherein the Erk-2 activity is compared to control cells treated only with the Erk-2 agonist.

13. The method of Claim 11, wherein the analyzing Erk-2 step is performed by Western blotting for pErk-2.

14. A method for treating neuropathic pain in a subject comprising: screening a gabapentinoid for gabapentin activity; and administering the gabapentinoid to the subject.

15. A method for treating central nervous disorders in a subject comprising: screening a gabapentinoid for gabapentin activity; and administering the gabapentinoid to the subject.

16. A kit for performing an in vitro assay to detect gabapentinoid activity in a compound comprising: a cell line genetically engineered to over-express the NK-1 receptor.

17. The kit of Claim 15, wherein the genetically engineered cell line further contains a MAP kinase inducible reporter construct.

18. A kit for performing an in vitro assay to detect gabapentinoid activity in a compound comprising: a cell line genetically engineered to over-express the mGluR5 receptor.